STATE OF SOUTH CAROLINA

(Caption of Case)

Application of Carolina Power & Light Company, d/b/a Progress Energy Carolinas, Incorporated for the Establishment of Procedures for DSM/EE Programs

BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

COVER SHEET

DOCKET NUMBER: 2008 - 251 - E

(Please type or print)

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DOCKETING INFORMATION (Check all that apply)

☐ **Emergency Relief demanded in petition** ☐ **Request for item to be placed on Commission's Agenda expeditiously**

☐ **Other:**

INDUSTRY (Check one)

- ☒ Electric
- ☐ Electric/Gas
- ☐ Electric/Telecommunications
- ☐ Electric/Water
- ☐ Electric/Water/Telecom.
- ☐ Electric/Water/Sewer
- ☐ Gas
- ☐ Railroad
- ☐ Sewer
- ☐ Telecommunications
- ☐ Transportation
- ☐ Water
- ☐ Water/Sewer
- ☐ Administrative Matter
- ☐ Other:

NATURE OF ACTION (Check all that apply)

- ☐ Affidavit
- ☐ Agreement
- ☐ Answer
- ☐ Appellate Review
- ☐ Application
- ☐ Brief
- ☐ Certificate
- ☐ Comments
- ☐ Complaint
- ☐ Consent Order
- ☐ Discovery
- ☐ Exhibit
- ☐ Expedited Consideration
- ☐ Interconnection Agreement
- ☐ Interconnection Amendment
- ☐ Late-Filed Exhibit
- ☐ Letter
- ☐ Memorandum
- ☐ Motion
- ☐ Objection
- ☐ Petition
- ☐ Petition for Reconsideration
- ☐ Petition for Rulemaking
- ☐ Petition for Rule to Show Cause
- ☐ Petition to Intervene
- ☐ Petition to Intervene Out of Time
- ☒ Prefiled Testimony
- ☐ Promotion
- ☐ Proposed Order
- ☐ Protest
- ☐ Publisher's Affidavit
- ☐ Report
- ☐ Request
- ☐ Request for Certification
- ☐ Request for Investigation
- ☐ Resale Agreement
- ☐ Resale Amendment
- ☐ Reservation Letter
- ☐ Response
- ☐ Response to Discovery
- ☐ Return to Petition
- ☐ Stipulation
- ☐ Subpoena
- ☐ Tariff
- ☐ Other:

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January 22, 2008

Mr. Charles L.A. Terreni
Chief Clerk of the Commission
SC Public Service Commission
P.O. Drawer 11649
Columbia, SC 29211

RE: Application of Carolina Power and Light Company d/b/a Progress Energy Carolinas, Incorporated for the Establishment of Procedures for DSM/EE Programs

DOCKET NO.: 2008-251-E

Dear Mr. Terreni:

Enclosed please find for filing the Pre-Filed Direct Testimony of Rick Hornby and Brian Henderson on behalf of Southern Alliance for Clean Energy, Natural Resources Defense Council, South Carolina Coastal Conservation League and the Southern Environmental Law Center in the above-captioned matter.

Sincerely,

Sarah Rispin

I. INTRODUCTION / SUMMARY

Q. PLEASE STATE YOUR NAME, EMPLOYER, AND PRESENT POSITION.

A. My name is J. Richard Hornby. I am a Senior Consultant at Synapse Energy Economics, Inc., 22 Pearl Street, Cambridge, MA 02139.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?

A. I am testifying on behalf of a coalition (Coalition) consisting of Southern Alliance for Clean Energy (SACE), Natural Resources Defense Council (NRDC), the South Carolina Coastal Conservation League (CCL) and the Southern Environmental Law Center (SELC). The member groups in this coalition are nonprofit, nonpartisan organizations who promote responsible energy choices that solve global warming problems and ensure clean, safe and healthy communities in South Carolina and throughout the Southeast

Q. PLEASE DESCRIBE SYNAPSE ENERGY ECONOMICS.

A. Synapse Energy Economics (Synapse) is a research and consulting firm specializing in energy and environmental issues, including: electric generation, transmission and distribution system reliability, market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power.

Q. PLEASE SUMMARIZE YOUR WORK EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I am a consultant specializing in planning, market structure, ratemaking, and gas supply/fuel procurement in the electric and gas industries. Over the past twenty years, I have presented expert testimony and provided litigation support on these issues in approximately 100 proceedings in over thirty jurisdictions in the United States and

Canada. Over this period, my clients have included staff of public utility commissions, state energy offices, consumer advocate offices and marketers.

Prior to joining Synapse in 2006, I was a Principal with CRA International and, prior to that, Tabors Caramanis & Associates. From 1986 to 1998, I worked with the Tellus Institute (formerly Energy Systems Research Group), initially as Manager of the Natural Gas Program and subsequently as Director of their Energy Group. Prior to 1986, I was Assistant Deputy Minister of Energy for the Province of Nova Scotia.

I have a Master of Science in Energy Technology and Policy from the Massachusetts Institute of Technology (MIT) and a Bachelor of Industrial Engineering from the Technical University of Nova Scotia, now merged with Dalhousie University. I have attached my current resume to this testimony as Hornby Exhibit 1.

Q. PLEASE SUMMARIZE YOUR EXPERIENCE WITH EE MEASURES AND POLICIES.

A. My experience with energy efficiency (EE) measures and policies began over thirty years ago as a project engineer responsible for identifying and pursuing opportunities to reduce energy use in a factory in Nova Scotia. Subsequently, in my graduate program at MIT I took several courses on energy technologies and policies, and prepared a thesis analyzing federal policies to promote investments in EE. After MIT, I spent several years with the government in Nova Scotia, during which time I administered a provincial program to promote energy conservation in the industrial sector and later included energy conservation in all sectors as part of energy plans developed for the province. More

recently, over the past twenty years as a regulatory consultant I have helped review and prepare numerous integrated resource plans (IRPs) in the gas and electric industries.

Most recently I presented Direct Testimony in North Carolina Docket No. E-2, Sub 931 regarding the Settlement between Progress Energy Carolinas, Inc (PEC or the Company), North Carolinas Utilities Commission (NCUC) Public Staff and Wal-Mart for a DSM/EE Cost recovery mechanism in that state.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. PEC has requested the establishment of procedures to encourage it to invest in cost-effective EE technologies and energy conservation programs. It has also requested an annual rider to allow recovery of all reasonable costs associated with such programs and an appropriate incentive for investing in such programs. PEC's revised application is presented in the Direct Testimony of Company witness Williams filed January 8, 2009. The Coalition retained Synapse to review the Company's request. The purpose of my testimony is to describe my review and present my conclusions based upon that review.

Q. WHAT DATA SOURCES DID YOU RELY UPON TO PREPARE YOUR TESTIMONY AND EXHIBITS?

A. My testimony is based primarily upon on the Direct Testimony of Mr. Williams in this proceeding. It is also informed by the testimony and discovery responses filed in PEC's North Carolina proceeding, NCUC Docket E-2 Sub 931, as well as various orders and reports regarding cost-recovery frameworks for ratepayer funded efficiency programs.

Q. HAVE YOU HAD THE OPPORTUNITY TO REVIEW RESPONSES TO DATA REQUESTS REGARDING THE COMPANY'S REQUEST?

A. No. I request the right to update my testimony if I receive responses to data requests that clarify my understanding.

Q. PLEASE SUMMARIZE THE COST RECOVERY PROCEDURES REQUESTED BY THE COMPANY.

A. Mr. Williams has proposed that the Company be allowed to collect three categories of costs and incentives through a demand-side management (DSM) and EE rider that would be set annually and subject to an annual true-up. The three categories are:

- Program costs. Expenses would be deferred and amortized over a ten-year period, with the unamortized balance earning the rate of return authorized in the Company's last rate case. Capital costs would be depreciated over the useful life of the equipment, with a return based on Company's current capital structure, current embedded cost of debt and return on approved in its last rate case.
- A program performance incentive (PPI). The PPI for EE programs would be equal to 13 percent of the net present value of net savings as calculated under the Utility Cost Test (UCT) and would be recovered over ten years. The PPI for DSM programs would equal 8 percent. (PEC's reference to DSM in this context appears to be to load management as specified in S.C. Code Ann. § 58-37-20); and
- Net Lost Revenues (NLR). PEC would recover NLR for measures installed under each program vintage year for three years, or until its next rate case.

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE COST RECOVERY PROCEDURES REQUESTED BY THE COMPANY.

A. My analysis leads me to the following conclusions regarding PEC's proposals:

- First, it is reasonable for the Company to have a set of cost-recovery procedures that enable it to recover the prudently incurred costs of its EE and DSM programs, plus a reasonable financial incentive and a reasonable mechanism for minimizing adverse impacts on its earnings from those programs;
- Second, PEC bears the burden of proving that the specific set of cost-recovery procedures it is proposing will result in rates that are just and reasonable;
- Third, PEC has not demonstrated that the specific set of cost-recovery procedures it is proposing will result in rates that are just and reasonable. Specifically, PEC has not provided a numerical example to demonstrate the actual operation of the specific set of proposed cost-recovery procedures over their full ten-year period for any representative or proposed set of programs. Without knowing the costs of the programs, the amount of energy conservation they achieve, or the way that any projected capitalized costs, incentives, or NLR will impact ratepayers, it is nearly impossible to determine whether the procedures are just and reasonable.
- Fourth, the Company has not demonstrated that the proposed levels of PPI, in addition to the return on equity it will earn on the unamortized balances, are reasonable given that it proposes to recover its costs and incentives through a rider subject to annual true-up and to earn the PPI based upon *whatever* level of reductions it achieves rather than having to meet performance target before earning that incentive. (In other words, PEC's implicit performance goal, after which it gets rewarded, is zero).

- Finally, PEC has not demonstrated that recovery of NLR for three years is the best approach for minimizing adverse impacts on its earnings from those programs.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE COST RECOVERY PROCEDURES REQUESTED BY THE COMPANY.

A. I recommend that the Commission:

- Either reject PEC's application and require it to submit a new application, or require PEC to supplement its application with a numerical example to demonstrate the actual impact on rates of its proposed cost-recovery procedures over the full cost recovery period. This new application or supplement should also include evidence demonstrating that the specific set of cost-recovery procedures PEC proposes will result in just and reasonable rates; and
- Require a review of the cost-recovery procedures ultimately approved after no more than four years of actual experience.

II. RATIONALE FOR COST RECOVERY PROCEDURES IN GENERAL

Q. PLEASE SUMMARIZE THE COMPANY'S RATIONALE FOR THE COST-RECOVERY PROCEDURES THAT IT PROPOSES.

A. According to Mr. Williams, PEC is facing the need to add new base-load generation at costs substantially greater than those reflected in its current rates. As a result, it expects that meeting the future service requirements of its customers through DSM/EE programs will be more cost-effective. Mr. Williams then notes the difference, from PEC's perspective, between meeting future customer service requirements through new supply-side generation and/or capacity, versus reductions in customer electricity usage and demand. Based upon those differences Mr. Williams states that PEC needs "...timely cost recovery for all costs incurred, a mechanism to recover net lost revenues and an appropriate incentive for promoting such programs". He asserts that South Carolina law permits the type of cost-recovery procedures that the Company is proposing.

Q. WHAT IS YOUR CONCLUSION REGARDING THE COMPANY'S BASIC RATIONALE FOR PROPOSING COST RECOVERY PROCEDURES FOR ITS EE AND DSM PROGRAMS?

A. The Company's rationale for proposing cost-recovery procedures for its EE and DSM programs is reasonable. Any entity responsible for reducing energy and demand through EE and DSM programs needs the opportunity to recover its prudently incurred costs plus a reasonable financial incentive to motivate its aggressive pursuit of all cost-effective reductions in electricity usage and demand. In addition, if the entity is a utility, it may need a mechanism or a combination of mechanisms to ensure that its earnings are not

adversely affected by those reductions in usage and demand. This rationale is discussed in reports published by such organizations as the American Council for an Energy Efficient Economy (ACEEE)[1] and the National Action Plan for Energy Efficiency (NAPEE).[2] Moreover, I am advised by counsel that if the Commission adopts procedures to encourage electric utilities to invest in cost-effective efficiency technologies and programs, South Carolina law requires those procedures to provide for the three categories of costs and incentives PEC is proposing. Thus, it is reasonable for PEC to have a set of cost-recovery procedures that enable it to recover the prudently incurred costs of its EE and DSM programs, plus a reasonable financial incentive and a reasonable mechanism for minimizing adverse impacts on its earnings from those programs.

III. REASONABLENESS OF SPECIFIC COST RECOVERY PROCEDURES

Q. DOES PEC BEAR THE BURDEN OF PROVING THAT THE SPECIFIC SET OF COST RECOVERY PROCEDURES IT IS PROPOSING ARE REASONABLE?

A. Yes. I am advised by counsel that the Commission is bound by the principle that "[e]very rate made, demanded or received by any electrical utility . . . shall be just and reasonable." S.C. Code Ann. § 58-27-810 (2007). From a ratemaking policy perspective it is my understanding that the proponent of a change in rates has the burden of proving that the proposed change is just and reasonable.

[1] Kushler, Martin, et al. *Aligning Utility Interests with Energy Efficiency Objectives.* ACEEE, October 2006.
[2] National Action Plan for Energy Efficiency (2007). *Aligning Utility Incentives with Investment in Energy Efficiency.* Prepared by Val R. Jensen, ICF International <www.epa.gov/eeactionplan>.

There are a variety of approaches available to PEC for recovering its program costs, earning a performance incentive and minimizing the adverse impact on earnings from its programs. PEC is proposing a specific set of procedures, with specific values for such details as amortization period, return and incentive levels. As the proponent, PEC bears the burden of demonstrating that from the specific set of approaches and design details it is proposing will result in rates that are just and reasonable.

Q. HAS THE COMPANY DEMONSTRATED THAT THE SPECIFIC SET OF COST RECOVERY PROCEDURES IT IS PROPOSING ARE REASONABLE?

A. No. Based upon my review PEC has not demonstrated that the specific set of cost-recovery procedures it is proposing will result in rates that are just and reasonable. First, it has not provided a numerical example to demonstrate the actual operation of the specific set of proposed cost-recovery procedures over their full ten year period for a representative, or proposed, set of programs. Second, it has not demonstrated that the proposed levels of PPI, in addition to the return on equity it will earn on the unamortized balances, are reasonable in view of the fact that it proposes to recover its costs and incentives through a rider subject to annual true-up and to earn the PPI based upon whatever level of reductions it achieves rather than having to meet a meaningful level of performance before earning that incentive, i.e. an iinplicit performance goal of zero. Finally, it has not demonstrated that recovery of NLR for three years is the best approach for minimizing adverse impacts on its earnings from those programs. I discuss each of these flaws in PEC's application below.

Q. HAS PEC DEMONSTRATED THE OPERATION OF ITS PROPOSED COST-RECOVERY PROCEDURES OVER THE FULL COST RECOVERY PERIOD?

A. No. PEC is proposing recovery of DSM/EE expenses over a ten-year period and DSM/EE capital costs over potentially longer periods. In the North Carolina proceeding it provided projections for only the first year of that ten-year period for its initial set of programs. In this proceeding it has not provided *any* projections or illustrative examples.

Q. WHY IS IT IMPORTANT FOR THE COMPANY TO PROVIDE A NUMERICAL EXAMPLE TO DEMONSTRATE THE ACTUAL OPERATION OF THE SPECIFIC SET OF PROPOSED COST-RECOVERY PROCEDURES?

A. A numerical example is essential for all parties to truly understand the implications of the specific set of proposed cost-recovery procedures on ratepayers, and their implications for shareholder incentives. At the end of the day the Commission must determine whether the rates that these procedures result in will be just and reasonable. I do not see how the Commission can make that determination without reviewing the estimated levels of rates and incentives for a proposed, or illustrative, set of programs. For example, how does the projected level of PPI compare to the return on equity? What impact does each category of cost and incentive have on the level of rates to be recovered?

Text descriptions of such procedures are subject to interpretation. A numerical example goes a long way towards improving transparency and minimizing the chances of misinterpretation. In addition, a numerical example provides Staff of the Commission and intervenors the opportunity to prepare comparative analyses of alternative approaches, and make better informed recommendations. For example, how would an

expensing approach compare to the proposed deferred accounting approach? What is the implication of a lower PPI?

Q. HAS PEC DEMONSTRATED THAT ITS PROPOSAL TO RECOVER A PPI IN ADDITION TO RECOVERY OF PROGRAM EXPENSES OVER TEN YEARS AND CAPITAL COSTS OVER THEIR USEFUL LIVES IS REASONABLE?

A. No. If the Commission adopts the procedures allowed under S.C. Code Ann. § 58-37-20, they must allow the utility to recover its costs and a reasonable rate of return to make the programs at least as financially attractive as construction of new generating facilities. On its face, PEC's proposal to recover its program costs over ten years, with a return on the unamortized balances, through an annual rider with a true-up appears to make its programs as financially attractive as construction of new generating facilities.

However, Mr. Williams states on page 7 of his pre-filed testimony that investments in supply-side resources are more capital intensive than demand-side resources, and therefore result in higher earnings. He goes on to state that the proposed PPI would allow PEC to "...recover at least a portion of the earnings foregone by investing in demand-side versus supply-side resources." Unfortunately, PEC has not provided any quantitative analyses to support his assertions for the PEC system. Mr. Williams does not provide an estimate of the earnings PEC will forego by investing in demand-side resources. Nor does he provide the threshold investment criteria that PEC requires before it will approve funding for either a supply-side or demand-side resource. Thus, the parties to this proceeding lack the analysis and evidence they need in order to determine whether the PPI will be too generous, just right, or not sufficient.

The goal of the incentive should be to make investing in demand-side resources at least as financially attractive, and preferably somewhat more attractive, than investing in new generating facilities. However, the incentive should not be designed to ensure that the Company's shareholders receive the same level of absolute earnings as if they had invested in supply-side resources, as that would reduce the savings to ratepayers from investing in less-expensive demand-side resources.

Q. HAVE ANALYSES BEEN PUBLISHED OF THE VARIOUS TYPES AND LEVELS OF FINANCIAL INCENTIVES AVAILABLE TO ENCOURAGE UTILITY PURSUIT OF ENERGY EFFICIENCY?

A: Yes. I realize that the Commission will base its decision on South Carolina specific circumstances and factors. Nevertheless, the lessons learned by other jurisdictions on these procedures may help inform the debate in South Carolina.

Peter Cappers and Chuck Goldman from Lawrence Berkeley National Lab have evaluated the financial implications of various types of shareholder incentives and have not drawn any conclusions regarding the best way to motivate utilities to pursue EE.[3] Both the ACEEE and the NAPEE have published survey reports on this issue, as I noted earlier. These reports describe the various approaches to cost recovery, bonus incentives and earnings stabilization mechanisms that are available to align utility financial incentives with pursuit of EE.

The report sponsored by the NAPEE cites a decision by the California Public Utilities Commission (CPUC) that is particularly relevant to PEC's discussion of the

incentives needed to put demand-sided investments on a par with, if not ahead of, supply-side investments. In that decision the CPUC adopted an incentive structure after conducting an analysis of the earnings that utilities could achieved from using supply-side resources to meet future energy requirements rather than EE.[4] Under the incentive structure approved in that proceeding, a utility that achieves 100% or more of its energy reduction goals will receive a pre-tax incentive equal to 12 % of the net savings from that reduction. On its face this incentive seems comparable to the approach that PEC is proposing, but in fact the PEC proposal is more attractive for several reasons.

- PEC proposes deferred accounting for its program costs, and to earn a return on at its weighted average cost of capital on the unamortized balance, *in addition* to the PPI. In contrast, California utilities are only eligible for the one financial incentive.
- PEC proposes earning an incentive on load management *and* EE. California utilities only earn an incentive on EE.
- PEC proposes earning an incentive at whatever level of reductions it actually achieves. California utilities can only earn the incentive if they achieve a pre-determined performance goal, which equates to incremental reductions greater than 1% of annual retail sales. In addition they face includes penalties for failure to meet specified minimum levels of performance.

[3] Cappers, Peter et al. Quantitative Financial Analysis of Alternative Energy Efficiency Program Incentive Mechanisms. – *Synapse to provide full cite to paper from 20008 ACEEE Summer Study*
[4] Decision 07-09-043 in Rulemaking 06-04-010, California Public Utilities Commission

Q. HAVE OTHER JURISDICTIONS TYPICALLY REQUIRED UTILITIES TO MEET A PRE-DETERMINED PERFORMANCE TARGET IN ORDER TO RECEIVE A PERFORMANCE INCENTIVE?

A: Yes. Chapter 6 of the NAPEE's report, *Aligning Utility Financial Incentives*, notes that "[m]echanisms that allow utilities to capture some portion of net benefits typically include savings performance targets".

Q. HOW DO THE SHAREHOLDER INCENTIVES IN THE COMPANY'S PROPOSED COST-RECOVERY PROCEDURES COMPARE TO SHAREHOLDER INCENTIVES IN COST-RECOVERY MECHANISMS FOR EE PROGRAMS APPROVED IN OTHER JURISDICTIONS?

A: The shareholder incentives in PEC's proposed cost-recovery procedures look high relative to those approved in other jurisdictions because:

- The Company has not proposed a specific performance target, whereas incentives approved in other states typically have a target.
- The Company's proposed levels of shareholder incentives appear higher than those approved for utility EE and DSM programs in the other jurisdictions, because of the recovery of a PPI in addition to a return on unamortized balances.

However, I acknowledge that it is difficult to make a complete "apples to apples" comparison of utility shareholder incentives for EE and DSM programs. First, a shareholder or management incentives is only one component of the regulatory framework within which a utility is delivering EE programs. Other relevant components may include statutory requirements, explicit performance targets, the method of program

cost recovery, the method of lost margin recovery, rate design, and rate levels. It is very difficult to either "normalize for" or capture all of these factors in any comparison of shareholder incentives. Second, the shareholder incentives in other jurisdictions are primarily for EE programs.

Q. PLEASE COMMENT ON THE RECOVERY OF NLR UNDER THE SETTLEMENT.

A. Net lost revenues represent the retail revenues PEC estimates it would have collected, in the absence of its programs, minus the costs it is able to avoid because of the reduction in annual energy and peak demand. Thus NLR represents the fixed costs of providing generation, transmission and distribution service, per kWh of retail sales, that PEC will not collect from each kWh of energy reduction resulting from its programs. The Company is proposing to recover net lost revenues for three years. However, it has not demonstrated that it has evaluated other approaches nor that it is the best approach.

Q. WHAT FACTORS DO YOU SUGGEST THAT THE COMMISSION CONSIDER WHEN DETERMINING WHETHER A PARTICULAR SET OF COST-RECOVERY PROCEDURES IS REASONABLE?

A. In order to determine whether a particular set of cost-recovery procedures is reasonable, the Commission should consider both the performance the Company proposes to achieve, and the compensation the Company will receive if it actually achieves that performance, including recovery of program costs, bonus incentives and net lost revenues.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

James Richard Hornby

Senior Consultant
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PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. *Senior Consultant,* 2006 to present.
Analysis and expert testimony regarding planning, market structure, ratemaking and contracting issues in the electricity and natural gas industries.

Charles River Associates (formerly Tabors Caramanis & Associates), Cambridge, MA.
Principal, 2004-2006.
Senior Consultant, 1998-2004.
Provided expert testimony and litigation support in several energy contract price arbitration proceedings, as well as in electric and gas utility ratemaking proceedings in Ontario, New York, Nova Scotia and New Jersey. Managed a major productivity improvement and planning project for two electric distribution companies within the Abu Dhabi Water and Electricity Authority. Analyzed a range of market structure and contracting issues in wholesale electricity markets.

Tellus Institute, Boston, MA.
Vice President and Director of Energy Group, 1997–1998.
Presented expert testimony on rates for unbundled retail services in restructured retail markets and analyzed the options for purchasing electricity and gas in those markets.
Manager of Natural Gas Program, 1986–1997.
Prepared testimony and reports on a range of gas industry issues including market structure, unbundled services, ratemaking, strategic planning, market analyses, and supply planning.

Nova Scotia Department of Mines and Energy, Halifax, Canada; 1981–1986
Member, Canada-Nova Scotia Offshore Oil and Gas Board, 1983–1986
Member of a federal-provincial board responsible for regulating petroleum industry exploration and development activity offshore Nova Scotia.

Assistant Deputy Minister of Energy 1983–1986
Responsible for analysis and implementation of provincial energy policies and programs, as well as for Energy Division budget and staff. Directed preparation of comprehensive energy plan emphasizing energy efficiency and use of provincial energy resources. Senior technical advisor on provincial team responsible for negotiating and implementing a federal/provincial fiscal, regulatory, and legislative regime to govern offshore oil and gas. Directed analyses of proposals to develop and market natural gas, coal, and tidal power resources. Also served as Director of Energy Resources (1982-1983) and Assistant to the Deputy Minister (1981-1982.

Nova Scotia Research Foundation, Dartmouth, Canada, Consultant, 1978–1981
Edited Nova Scotia's first comprehensive energy plan. Administered government-funded industrial energy conservation program—audits, feasibility studies, and investment grants.

Canadian Keyes Fibre, Hantsport, Canada, Project Engineer, 1975–1977

Imperial Group Limited, Bristol, England, Management Consultant, 1973–1975

EDUCATION

M.S., Technology and Policy (Energy), Massachusetts Institute of Technology, 1979.
Thesis: "An Assessment of Government Policies to Promote Investments in Energy Conserving Technologies"

B.Eng. Industrial Engineering (with Distinction), Dalhousie University, Canada, 1973

EXPERT TESTIMONY AND LITIGATION SUPPORT (1987 to present)

Provided expert testimony and/or litigation support on planning, market structure, ratemaking and gas supply/fuel procurement in the electric and gas industries in approximately 100 proceedings in over thirty jurisdictions in the United States and Canada. List of proceedings available upon request.

Q. PLEASE STATE YOUR NAME, ADDRESS AND POSITION.

A. My name is Brian M. Henderson. I am an independent energy management consultant and my business address is 527 Inverrary Street, Murrells Inlet, South Carolina, 29576.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?

A. I am testifying on behalf of the Natural Resources Defense Council, Southern Alliance for Clean Energy, the South Carolina Coastal Conservation League and the Southern Environmental Law Center. These nonprofit, nonpartisan organizations promote responsible energy choices that solve global warming problems and ensure clean, safe and healthy communities in South Carolina and across the Southeast.

Q. PLEASE STATE BRIEFLY YOUR EDUCATIONAL BACKGROUND.

A. I received a B.S. degree in Physics from Indiana University of Pennsylvania in 1972 and a M.S. degree in Mechanical Engineering from Rensselaer Polytechnic Institute in 1980.

Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND EXPERIENCE.

A. I have over 34 years of experience in energy efficiency for both public and private organizations as a consultant, senior manager, department head, program designer and project engineer. During the past year, I have been involved in providing design assistance on energy efficiency and demand response programs for a major utility in South Africa as part of an international team sponsored by The World Bank. I am also participating on the Georgia Power DSM Working Group helping to design their energy efficiency and demand response programs. In addition, I am also currently a member of the Peer Review Panel of the US Department of Energy to help guide a multi-year impact evaluation of the national State Energy Program.

Prior to that, for 13 years from 1995 through January 2008, I was the Director of Energy Efficiency Services at the New York State Energy Research and Development Authority (NYSERDA). While at NYSERDA, I directed the design, development and implementation of a $635 million portfolio of energy efficiency and demand response programs primarily targeting the commercial, institutional, multi-family and industrial customers of New York State. NYSERDA was designated as the non-utility administrator of the 13-year System Benefits Charge program. In addition to my responsibilities as Director of Energy Efficiency Services, I also managed NYSERDA's initial development of the first System Benefits Charge program operational plan in 1998, and the renewal plans of 2001 and again in 2006, as these successful programs were expanded with additional funding. I also oversaw the development and implementation of the $112 million System Wide Program with a target of 150 megawatts (MW) of demand reduction in the Consolidated Edison service territory. While at NYSERDA, I also managed the Governor's Executive Order on "Green and Clean State Buildings and Vehicles" and chaired the interagency "Coordinated Electricity Demand Response Initiative."

For the past twelve years, I was actively involved in a number of national and regional energy efficiency organizations across the country. I have served on the Board of Directors and held numerous officer positions with various organizations, such as the Consortium for Energy Efficiency, the Northeast Energy Efficiency Partnerships, the New Buildings Institute and the previous Energy Efficiency Procurement Collaborative. I was also appointed by the U.S. Department of Energy and chaired the Federal Energy Management Advisory Committee established by Congress to provide recommendations

on the federal government's $10 billion annual energy bill. For approximately 6 years, I was also Chair of the Buildings Committee of the National Association of State Energy Officials.

Prior to 1995, I held several management positions at the New York State Energy Office, including the Director of the Technical Services Bureau. My primary responsibilities were overseeing the implementation of energy efficiency projects of the Schools and Hospitals Grant Program funded by the federal government, and the administration of the State's Energy Conservation Construction Code. For approximately four years, I also was a project engineer in the Energy Systems Group of Grumman Aerospace Corporation (now Northrup Grumman).

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY BEFORE ANY OTHER REGULATORY AGENCY?

A. Yes. I have presented testimony before the New York State Public Service Commission and the North Carolina Utilities Commission.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide information to the Public Service Commission of South Carolina in Docket No. 2008-251-E (Docket), regarding the application of Progress Energy Carolinas, Inc. (PEC or the Company) for the establishment of procedures for Demand Side Management/Energy Efficiency (DSM/EE) programs. In summary, I recommend that the Commission condition its approval of the funding mechanism for Progress's forthcoming DSM/EE programs on a set of requirements that they: (i) focus on long-term energy efficiency, rather than short-term demand response,

thereby providing greater economic and environmental benefits to South Carolina ratepayers; (ii) are developed through some sort of comprehensive program development strategy resulting in a state-of-the-art portfolio of DSM and EE programs with annual energy-use reduction targets comparable to those being achieved by other utilities around the country; and, (iii) are maintained in open and transparent consultation with energy efficiency experts, ratepayer advocates and environmental groups through an ongoing Advisory Group process that provides a continuous exchange of program information, planning and results.

Q. CAN YOU EXPAND ON YOUR RECOMMENDATIONS REGARDING THE PROGRAM CONTENT?

A. Yes. Although the Company has not yet applied for permission to roll out any specific EE or DSM programs, the application for PEC's cost-recovery mechanism envisions a slate of programs that will be a combination of (i) energy efficiency or energy conservation and (ii) demand side management or demand response initiatives. Ideally, the DSM and EE programs that PEC rolls out should be benchmarked to the best existing DSM and EE programs, taking advantage of the hard-earned lessons of utilities and program administrators across the country. This way, PEC can provide maximum value to ratepayers for the rate increases that it seeks to pay for its DSM and EE programs.

EE and DSM programs have been in place across the US for over 20 years, Taking advantage of this, efforts have been underway to identify the best practices of both utility and third-party administrator programs so as to strengthen the design and implementation of existing programs and create models for new programs to help utilities

and other program administrators quickly implement successful approaches.[1] These efforts have identified several key features common to the most successful programs:

- Comprehensive approaches that improve energy efficiency of entire buildings or industrial processes, rather then just address single measures or technologies. This can also include a full menu of services, including incentives, marketing, training, technical assistance, and education on a number of end-use applications (such as lighting, appliances, HVAC systems, and improvements to the building envelope).
- Ability to address specific market barriers that impede energy efficiency, such as lack of knowhow or working capital on the part of property owners and businesses.
- Ability to deliver substantial direct kilowatt-hour (kWh) and associated kilowatt (kW) reductions through permanent energy efficiency improvements. This ability can be measured either by the overall total magnitude of impact of the set of programs, or in the amount of impact per dollar spent to deliver the programs.
- Ability of the program to produce lasting impacts by transforming the energy efficiency and performance of the targeted markets.
- Facilitated by an open, transparent stakeholder process that encourages strategic input into the design, delivery, implementation and evaluation of the programs.

[1] For example, the American Council for an Energy-Efficient Economy (ACEEE) has completed national reviews of exemplary energy efficiency programs in 2003[1] and again in 2008. York, Dan; Martin Kushler and Patti Witte. 2008. *Compendium of Champions: Chronicling Exemplary Energy Efficiency Programs from Across the U.S.* Report# U081. Washington, DC. American Council for an Energy-Efficient Economy.

In sum, so that South Carolina ratepayers can get the most out of the rate increases that PEC seeks in this Docket, I would urge the Commision to require that that rate increase pay for a set of complementary initiatives, strategically developed through an efficient program design, marketing, deployment and evaluation process, that uses multiple approaches to maximize energy efficiency gains . To do this, PEC's programs should incorporate the best practices of exemplary programs around the country.

Q. WHAT ARE THE TYPES OF ENERGY EFFICIENCY PROGRAMS THAT YOU WOULD EXPECT TO BE DESIGNED AND DEPLOYED?

A. PEC's slate of programs should be composed of an initial core set of long-term energy efficiency program initiatives, which can (1) provide significant multi-year cost savings to participating customers and reduce emissions of greenhouse gases and other pollutants, and (2) lay down an expandable framework for future program enhancement with additional complementary initiatives. Consistent with the cost-effectiveness criteria required by S.C.C.A. § 58-37-20, this initial set of programs should include:

- Existing Residential Sector. The residential programs for which PEC seeks a rate increase in this Docket should focus on increasing the market share of Energy Star residential lighting, products and appliances. This should include awareness campaigns, retailer partnerships and financial incentives to both retailers and customers, including bulk discounts and upstream markdowns. Complementing this should be a collection and recycling initiative that removes operable but inefficient secondary refrigerators and freezers from residences. Critically, capping this off should be a whole-house strategy that provides homeowners

access to a broad spectrum of systemic energy efficiency measures such as duct sealing, insulation and weatherization that improves the energy performance of the entire house. Services should be provided through home energy auditors and specially trained and certified retrofit contractors, with quality assurance procedures and diagnostic equipment, such as blower door testing and HVAC instrumentation.

- New Construction Residential Sector. To transform the way new homes are designed and built in South Carolina, an Energy Star New Homes initiative should be included in PEC's initial program portfolio. Capitalizing on the national Energy Star platform, the initiative should focus on overall home design through a building science approach, taking into account system and measure interactive effects, as well as incentives to outfit the home with Energy Star appliances. A strong partner component should be included to instruct builders on best construction practices, and offer incentives to builders to meet tiered energy performance criteria.
- New Commercial Construction. PEC's commercial programs should promote highly efficient new commercial buildings that exceed South Carolina minimum energy code standards. This initiative should create long-term changes in the design and construction practices by mainstreaming electrical EE practices in non-residential buildings. It should provide training and "best practices" to architects, builders trade allies, and contractors, as well as promotion and education for building owners, managers, and developers. Financial incentives should be

provided on a fixed per-unit incentive for a set of energy efficient measures with predictable performance, custom measures based on measured performance, whole building incentives with greater levels of funding based on higher levels of energy savings, and design incentives to the architectural/engineering design teams to encourage energy innovative designs. PEC's programs should also include training facility operational staff on the energy efficient systems to ensure the persistence of energy savings well into the future, maximizing up-front investments.

- Existing Commercial Buildings. Some of the largest energy savings can be achieved in the existing commercial buildings sector through a commercial retrofit program. Non-residential customers should be provided necessary technical and financial resources to implement EE retrofits in their buildings. Performance-based incentives should be provided for the completion of capital projects yielding verifiable savings, along with low-interest financing to help customers obtain the necessary capital to implement the measures. A retro-commissioning component should include the systematic step-by-step process of identifying and correcting energy related problems ensuring system optimization through tune-up of equipment, diagnostic testing and recommended capital improvements. For smaller commercial customers, who usually require more direct assistance to identify and implement measures, a direct-install provision should be included with pre-qualified contractors, primarily focusing on the quick identification and implementation of straightforward improvements to, e.g., lighting systems.

- Energy Efficiency Services Market Development. For all of its programs, PEC should partner with private sector contractors and installers on program deployment. Since utility staff will not be installing the actual EE and DSM measures, special attention needs to be focused on the network of private-sector energy service providers that will actually be doing the work. PEC's programs should be geared to help build an expanded network of energy service providers, installation contractors, and energy service companies (ESCOs). Scaling up of energy efficiency programs has been shown to generate jobs for equipment installers, contractors, engineers, service technicians, ESCOs and other service providers, thereby stimulating local economic development during this time of economic recession. For example, New York state's program has created and sustained an estimated 4,700 additional jobs.[2] PEC's programs should be structured to help facilitate and quickly ramp up this service industry so that the industry can effectively handle the anticipated increase in EE service needs.

Q. ARE THERE COMPARISONS THAT CAN INDICATE HOW MUCH OF AN IMPACT THE OVERALL PROGRAM SHOULD BE MAKING?

A. Yes. The PEC program should be consistent with its industry peers. As of June 2008, 123 organizations including numerous utilities have made public commitments to the

[2] *New York Energy $mart program: Evaluation Status Report Year Ending December 31, 2007. Report to the System Benefits Charge Advisory Group.* Final Report March 2008. New York State Energy Research and Development Authority (NYSERDA). Page 2-23.

National Action Plan for Energy Efficiency,[3] which has aggressive targets. For example, the Sacramento Municipal Utility District has a goal of saving 15% over the next 10 years. New York state is moving forward with an Energy Efficiency Portfolio Standard, which establishes a 15% reduction in electricity usage by 2015 below that forecasted level.[4] Further, Duke Energy has signed an agreement with several national organizations to aggressively ramp up energy savings to add energy efficiency capacity into the system equivalent to at least 1% of 2009 retail electricity sales each year by 2015.[5]

It has been repeatedly shown that even utilities new to the endeavor (such as PEC) can ramp up EE programs quickly for large impacts. For example, in 2007, the third year of its EE program, the Arizona Public Service Company achieved annual energy savings equivalent to 0.89% of retail electricity sales (ramping up from 0.09% in 2005, and 0.37% in 2006).[6]

Similar to other utilities, PEC should accelerate the energy savings impacts of the programs for which it seeks reimbursement in this Docket with an aggressive portfolio of EE program initiatives. Table 1, below, provides what might be typically expected and recommended in an acceptable ramp up from a comprehensive new set of programs. For

[3] National Action Plan for Energy Efficiency. Web-site http://www.epa.gov/cleanenergy/energy-programs/napee/comitments.html. August 26, 2008.

[4] New York State Public Service Commission. Case 07-M-0548, Energy Efficiency Portfolio Standard, Order Establishing Energy Efficiency Portfolio Standard and Approving Programs. Issued June 23, 2008.

[5] Alliance to Save Energy, American Council for an Energy-Efficient Economy, and the Energy Future Coalition. March 4, 2008 letter to NCUC.

[6] Arizona Public Service Company's response to Western Resource Advocates First Set of Data Requests. Arizona Corporation Commission Docket NO. E-01345A-08-0172. August 4, 2008.

comparison purposes, the table includes the previously mentioned Arizona Public Service ramp-up of annual energy efficiency targets, and also identifies Duke Energy's planned annual incremental energy savings for its Ohio operations, ramping up to 0.90 by 2013.[7]

We urge the Commission to require, in exchange for a rate increase, that PEC seek to procure all cost-effective energy efficiency, and achieve an incremental annual reduction through energy savings of at least 0.75% of retail sales by 2013, and a cumulative reduction of at least 1.85% over a 5-year period. This would be appropriate to establish and build the program, and put it on the path toward achieving a 1% annual reduction in energy use by 2015, on par with those levels aimed for by Duke and other peer utilities.

Table 1 –Incremental Annual Energy Savings
Percentage of MWh Sales

	Year 1	Year 2	Year 3	Year 4	Year 5
Recommended PEC SC Program	0.10	0.20	0.30	0.50	0.75
Proposed Duke Energy Ohio Program	0.30	0.50	0.70	0.80	0.90
Arizona Public Service Program	0.09	0.37	0.89	*	*

Q. IS THERE A BENEFIT IN LAUNCHING LARGER, WELL FUNDED PROGRAMS AT THE OUTSET?

A. Yes. In order to maximize ratepayer funds sought by PEC in this Docket, PEC should be asked to fund its EE programs at a sufficient level to build substantial programs that can achieve economies of scale. In other words, PEC's EE program design and development

[7] Duke Energy Ohio Energy Efficiency Forecast. Supplemental Direct Testimony of Richard G. Stevie on behalf of Duke Energy Ohio before the Public Utilities Commission of Ohio. Impacts to meet requirements of SB 221, page 14 of 23. September 16, 2008.

costs can be likened to those it would put into the design and construction of a new power plant; and its EE program deployment costs operation costs for such a power plant. It is well understood that the more the plant is operated, the better the return on investment. The same principal holds for the deployment of EE programs.

This is illustrated Table 2, below, which provides a recent snapshot of a three-year period of NYSERDA's scaled-up program deployment. As additional funding for customer incentives went into the system, EE impacts and total resource cost ratio increased, and the program cost per kWh saved dropped.[8]

Table 2 – Maximizing Deployment Costs

NYSERDA Program Year	2004	2005	2006
TRC cost/benefit ratios	1.5	2.3	3.0
Program cost per kWh saved ($)	0.018	0.012	0.009

Q. IN ADDITION TO PROGRAM RECOMMENDATIONS, DO YOU HAVE OTHER RECOMMENDATIONS THAT WILL HELP ENSURE THE SUCCESSFUL IMPLEMENTATION OF ENERGY EFFICIENCY PROGRAMS?

A. Yes. An open, transparent and stakeholder-driven program-evaluation process has proven to be an integral component of the more successful energy efficiency and load management programs around the country. An open, stakeholder-driven process has been used very successfully, for example, during the past nine years of New York state's

[8] *New York Energy $mart program: Evaluation Status Report Year Ending December 31, 2007. Report to the System Benefits Charge Advisory Group.* Final Report March 2008. New York State Energy Research and Development Authority (NYSERDA). Pages 2-29 and 2-30.

System Benefits Charge (SBC) program, which has a 24-member Advisory Group consisting of national evaluation experts, representatives from business associations, the energy service industry, customer end-use sector organizations, environmental advocates, other utilities, the State Legislature, and national evaluation experts.[9] Similarly, I recommend that the Commission ask PEC to establish an ongoing Advisory Group to:

- Provide periodic input to the utility and its staff and contractors on the quality and effectiveness of their programs;
- Assist in the preparation of periodic program evaluation plans;
- Critique status reports and program evaluation findings prepared by utility staff and independent evaluation contractors;
- Analyze program benefit/cost information, and;
- Provide ongoing recommendations to continually enhance the portfolio of programs servicing South Carolina's eligible customers.

The Advisory Group should meet periodically (at least three times per year, for 1-2 days), and should include key representatives for ratepayers, organizations, and customer classes, that can interact with PEC over the multi-year time frame covered by this Docket to recommend new programs and program enhancements. Meeting agendas and objectives would be prepared by the Advisory Group, PEC and Commission staff,

[9] In addition to helping establish the evaluation strategy and plans, New York's SBC Advisory Group also recommended increases in the evaluation budgets during the earlier years of the SBC program to support expanded evaluation activities of the programs. The New York State Public Service Commission approved the evaluation budget increase in a subsequent order extending the SBC program. The SBC Advisory Group continues to help identify the measurement & evaluation priorities and serves as the overall "Independent Evaluator" established by the New York State Department of Public Service and The New York Public Service Commission.

and include discussion of program status reports, evaluation findings, proposed program enhancements, financial status reports, and possible future program directions. Advisory Group members could participate in the review of contractors' proposals and selection committees considering independent monitoring and evaluation contractors, and could also assist in reviewing draft requests-for-proposals to ESCOs prior to their issuance.

The Advisory Group should also have a major role in defining the monitoring and evaluation strategy, reviewing the individual program evaluation findings prepared by the independent evaluation contractors and utility staff, and commenting on the overall annual reports prior to their formal submission on to the Commission. The Advisory Group could also help set priorities for the evaluation activities with the Commission, as well as direct the independent evaluation contractors to undertake special analyses, case studies and program gap analyses. Finally, The Advisory Group should have an opportunity to influence the overall evaluation process and provide recommendations to the Commission.

Working with such an Advisory Group would provide an important opportunity for PEC, the Commission, and Office of Regulatory Staff to oversee the process and better analyze the success of PEC's programs. Expenses for establishing and convening this group would be relatively small, covering only travel and meeting expenses, as most of the members would be paid for their time by their respective organizations.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that the following persons have been served with the Pre-Filed Direct Testimony of Rick Hornby and Brian Henderson on behalf of Southern Alliance for Clean Energy (SACE), the Natural Resources Defense Council (NRDC), the South Carolina Coastal Conservation League (CCL), and the Southern Environmental Law Center (SELC).

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